

AMENDMENTS TO THE DRAWINGS

Applicant submits herewith a Replacement Sheet for Figures 5A-5D. The figures have each been provided with a designation of “related art” in order to comply with the Examiner’s request.

Attachment: Replacement sheet (1)

REMARKS

Claims 1-20 are pending in the present application. Claims 5-8 were formerly withdrawn from consideration. In the current Office Action, dated March 28, 2005, claims 9-20 have also been withdrawn. Claims 1-4 are currently under consideration. No new matter has been added.

Restriction

The Office has withdrawn new claims 9-20 from consideration on the grounds that they are directed to an invention that is independent or distinct from the original invention. Applicant respectfully traverses.

Claims 17-20 depend from claims 1-4, respectively. Since these claims depend from claims already under examination, it is submitted that even if they define patentably distinct subject matter, their examination here is proper as there is no additional burden on the Examiner in examining claims 17-20.

Additionally, product claims 9-20 should be examined in conjunction with product claims 1-4 under consideration. The Office Action states that the product defined by claims 1-4 may be made by a different process from the product defined by claims 9-20 and therefore restriction is proper. The Office Action is stating a rationale for restriction that applies to product and method claims being presented in the same application, not to two sets of claims that are each product claims. Product by process claims are product claims whose structure is implied by the steps of the process. See MPEP 2113. As such, it is the structure of the claimed product and not the process that is considered in establishing patentability. Further, such product by process claims are routinely examined in conjunction with other product claims in examination, since again it is the product that is being examined and not the process by which the product is made. The product claims resulting from the specified process as well as the product claims not so limited should therefore be examined together.

In view of this, Applicant respectfully requests rejoinder of claims 9-20 for examination.

Applicant further notes the provisions of MPEP 821.04, wherein process claims withdrawn from consideration will be rejoined upon allowance of a product claim. In the event that the restriction requirement is maintained, Applicant respectfully requests reconsideration of all withdrawn claims under MPEP 821.04 upon allowance of a product claim.

Applicant additionally notes the provisions of MPEP 806.04(d), under which once a generic claim is determined to be allowable, and MPEP 809, under which once a linking claim such as a generic claim or other type of linking claim is found allowable, the Office will rejoin for consideration linked claims that were withdrawn from consideration previously. In the event that the restriction requirement is maintained, Applicant respectfully requests reconsideration of all withdrawn claims under MPEP 806.04(d) and MPEP 809.

Drawings

The Examiner has indicated that Figures 5A-5D should be designated by a special legend, since they illustrate only that which is old. Applicant submits herewith a Replacement Sheet for Figures 5A-5D, with a legend of --Related Art--. This submission is not to be construed as an admission that the figures represent prior art to the invention. It is respectfully submitted that these drawings now fulfill the requirement of MPEP § 608.02(g).

Rejections under 35 U.S.C. §103(a)

The Office has rejected claims 1-4 under 35 U.S.C. §103(a) as allegedly being unpatentable over related art that the Office characterized as “admitted prior art.” The Office also noted that the recited disclosure does not disclose impurity concentration but concluded it would be obvious to one of ordinary skill in the art to disclose optimum or working ranges from “the general conditions of a claim ... disclosed in the prior art”, citing *In re Aller* as supporting the rejection. Applicant respectfully traverses.

Preliminarily, Applicant has not admitted that the recited related art is prior art. Applicant will treat the recited related art as if it was prior art for purposes of addressing the rejection, but Applicant's treatment is not to be construed as an admission that the related art qualifies as prior art under 35 U.S.C. Sec. 102, and Applicant reserves the right to address this issue in future prosecution if warranted.

Further, the presently claimed subject matter is patentable because the rationale of *In re Aller* does not apply to the present facts. *In re Aller* applies to circumstances where a patentee is optimizing a parameter that is disclosed in the art and whose effect is already known. See e.g. MPEP 2144.05(II), p. 2100-143 left column ("Claimed process which was performed at a temperature between 40°C and 80°C and an acid concentration between 25% and 70% was held to be prima facie obvious over a reference process which differed from the claims only in that the reference process was performed at a temperature of 100°C and an acid concentration of 10%."); see also *Peterson*, 315 F.3d at 1330, 65 USPQ2d at 1382 ("The normal desire of scientists or artisans to improve upon what is already generally known provides the motivation to determine where in a disclosed set of percentage ranges is the optimum combination of percentages.").

The recitation of the related art in Applicant's patent application says nothing about reducing or otherwise addressing impurities at two particular interfaces, the interface between the semiconductor current confinement layer and the semiconductor etching stop layer and an interface between the semiconductor current confinement layer and the striped ridge structure. The recitation of the related art also provides no insight into impurities being present and what the impurities might be. Further, the recited related art has not highlighted or stated anything with respect to these particular interfaces as ones that together are of particular interest or importance in addressing variability of device performance or device reliability.

Since *In re Aller* only supports rejections for varying values of parameters of known importance, and since the recited "related art" in Applicant's specification says nothing about the particular parameters and also does not point out two particular interfaces at which values of

impurities are to be controlled, In re Aller does not support a rejection of claims 1-4. Applicant therefore respectfully requests withdrawal of the rejection.

The Office has also rejected claims 1-4 under 35 U.S.C. §103(a) as allegedly being unpatentable over Tsunoda (JP2001-196694). The Office Action states that it would have been obvious to meet the impurity concentration (presumably for both interfaces as recited in claim 1) due to the disclosure at column 7 lines 54-67 of U.S. Pat. No. 6,518,159, and that it would have been obvious that the impurities are carbon/oxygen based as in claims 2-4. The Office again relied on In re Aller to support the rejection.

Applicant respectfully traverses the rejection. All comments herein are directed to the disclosure of the English-language family member of JP2001-196694, U.S. Pat. No. 6,518,159.

As above, the cited reference does not recognize what parameters are to be optimized, and therefore In re Aller does not support a rejection of claims 1-4. The cited reference recites nothing about a problem of impurities or impurity levels or even what those impurities might be that would need to be minimized, and the cited reference also fails to disclose at what structural features in the device those impurities are to be minimized. There is also nothing in the reference that suggests reducing impurities at the two specified interfaces over any of a number of other adjustments to the device that are possible in e.g. composition or thickness of layers or any of the other possible changes to processing conditions or materials of construction in order to attempt to provide improved device reliability or yield. Nothing in the cited reference leads one to conclude that e.g. carbon or oxygen or the combination of the two is the source of a problem or even that the problem is one of impurities, and nothing in the cited reference suggests that there is a need to reduce the level of such contaminants below the level specified in claim 1 in order to provide a new semiconductor light emitting device.

The discovery of the claimed device therefore involves more than merely making routine adjustments to parameters that are known to affect device reliability or yield. The inventor recognized the source of the problem and derived a device (and method) that addressed the problem.

Furthermore, the present application states that “the effect of using pure water having a resistivity of higher than $1 \text{ M}\Omega\text{m}$ is remarkably¹ obtained” (please see specification page 20, lines 13-17 (emphasis added)) in regards to the present invention. The resistivity is, in this instance, a measure of the amount of impurities remaining and correlates with a value of no more than $1 \times 10^{17} / \text{cm}^3$ (specification page 20 lines 13-15). It was therefore remarkable to the inventor (a person who, by definition as an inventor, is a person of greater than ordinary skill in the field) that the low level of impurities provided benefits of e.g. improved product yield or device longevity. Since the resultant benefit was remarkable to a person of greater than ordinary skill in the field, it is clear that the cited art (Figures 5A-5D as well as Tsunoda) did not teach such an effect or suggest experimentation to learn the effect obtained by reducing impurities such as carbon and oxygen below the level specified in claim 1. Since the association between the content of impurities and the benefit of improved yield or lifetime has not been presented in the cited references, any experimentation relating to such an association is not routine.

Furthermore, the lack of disclosure of even an association between the resistivity of pure water and the content of the impurities, as discussed above, would further indicate that this result would be new and unexpected, and is different in kind and not merely in degree from the results of the cited art.

In view of the above, Applicant respectfully submits that the rejected claims are patentable over the cited art.

¹ “Remarkably”, as defined in Webster’s Third New International Dictionary (1986; Merriam-Webster Inc., Springfield, Massachusetts, U.S.A.): “in a remarkable manner or to a remarkable degree: Unusually, Extraordinarily” (emphasis added).

CONCLUSION

In view of the above, each of the presently pending claims in this application is believed to be in immediate condition for allowance. Accordingly, the Examiner is respectfully requested to withdraw the outstanding rejection of the claims and to pass this application to issue. If it is determined that a telephone conference would expedite the prosecution of this application, the Examiner is invited to telephone the undersigned at the number given below.

In the event the U.S. Patent and Trademark office determines that an extension and/or other relief is required, applicant petitions for any required relief including extensions of time and authorizes the Commissioner to charge the cost of such petitions and/or other fees due in connection with the filing of this document to Deposit Account No. 03-1952 referencing docket no. 299002056700. However, the Commissioner is not authorized to charge the cost of the issue fee to the Deposit Account.

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Respectfully submitted,

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